FIG. 1A

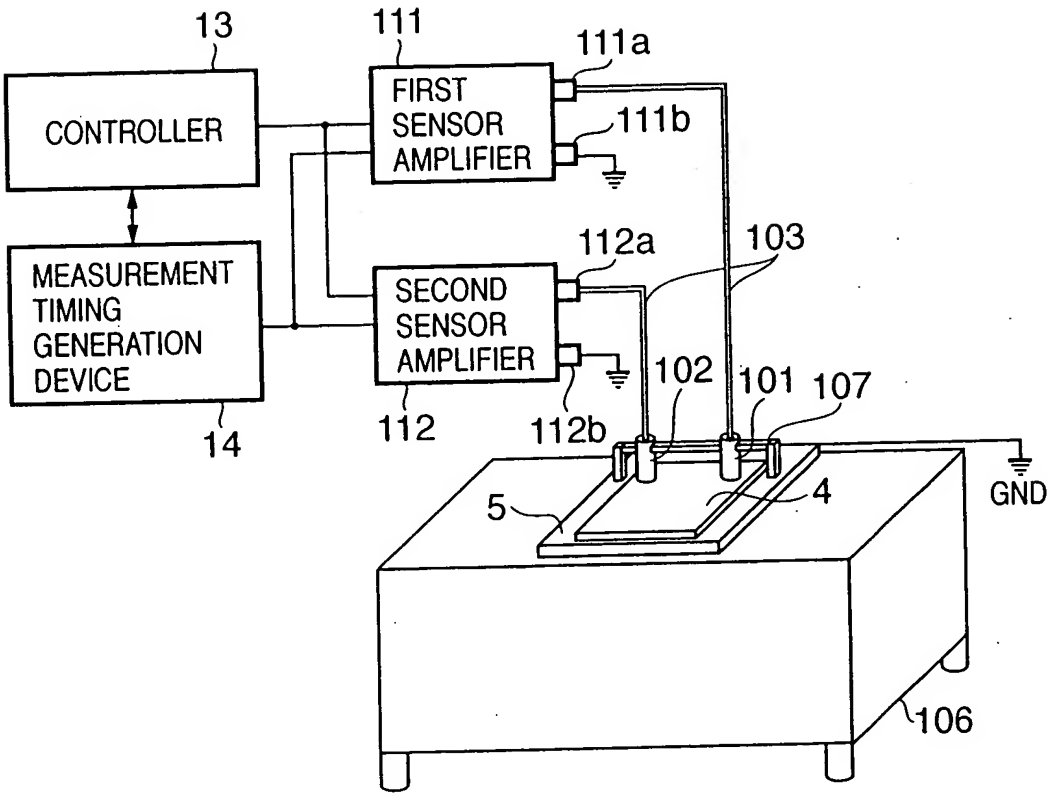

13
111
111a
CONTROLLER
FIRST SENSOR AMPLIFIER
111b
MEASUREMENT TIMING GENERATION DEVICE
112a
103
SECOND SENSOR AMPLIFIER
102
101
107
14
112
112b
GND
5
4
106

FIG. 1B

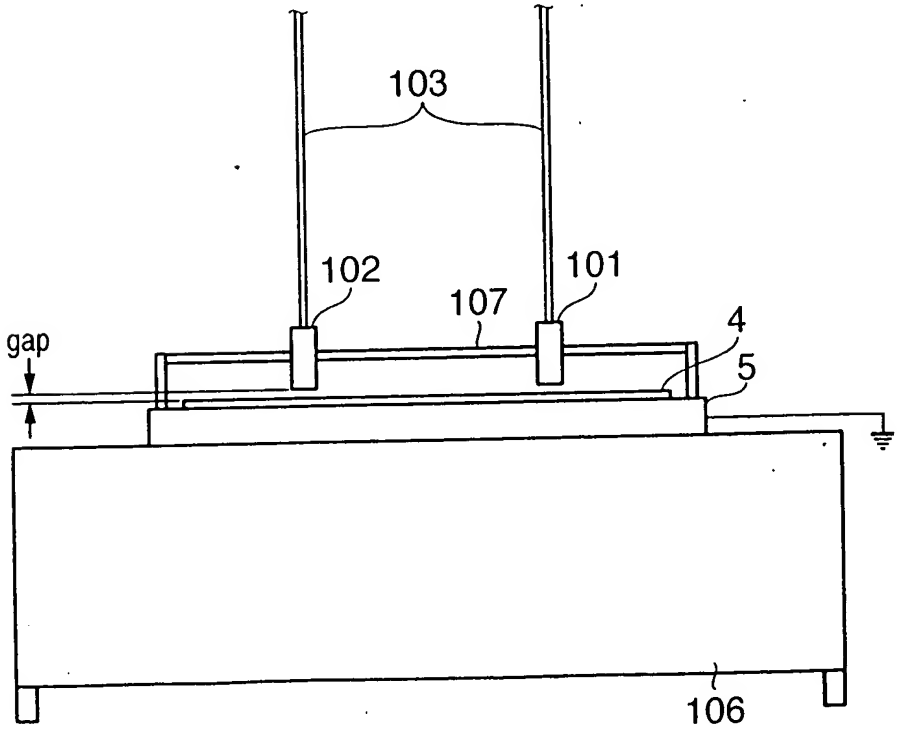

103
102
101
107
gap
4
5
106

FIG. 2

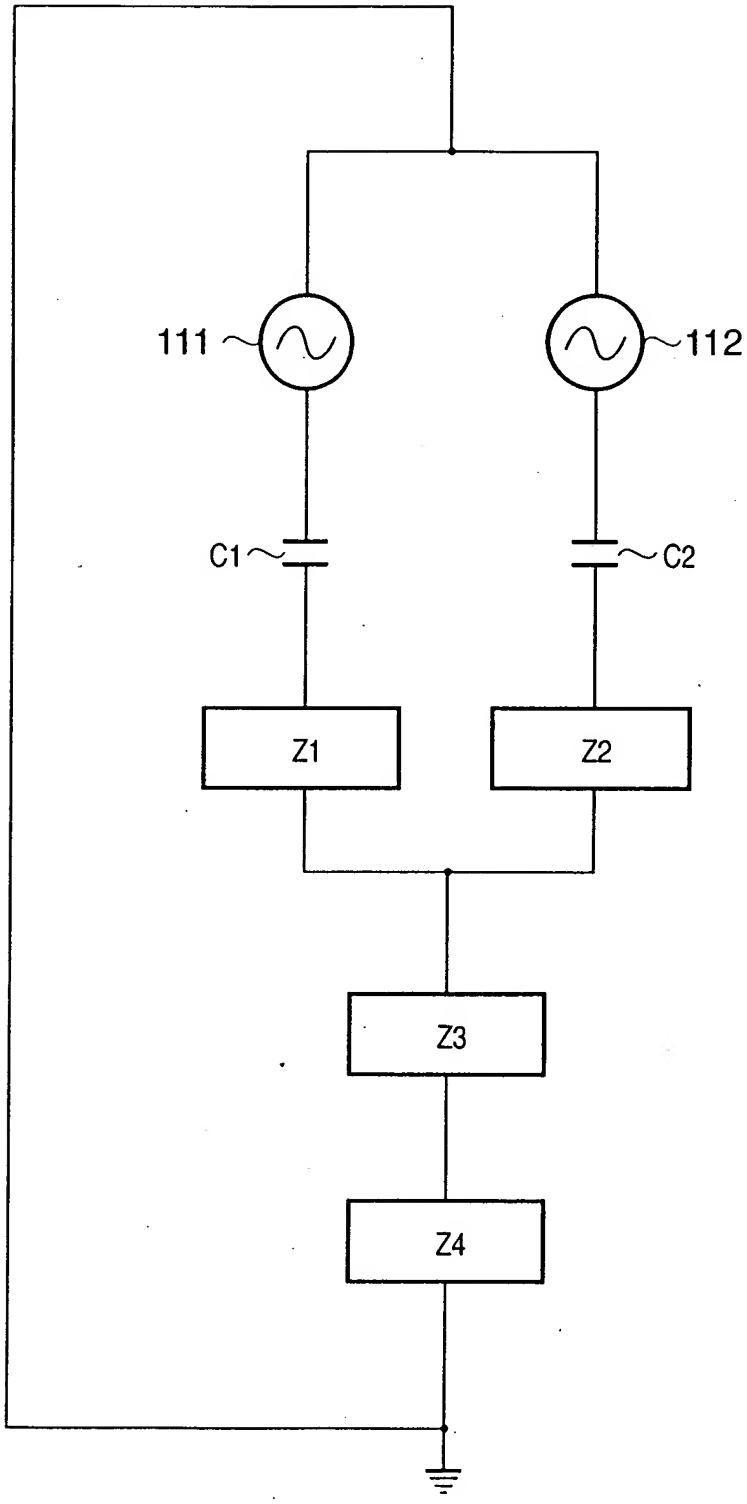


FIG. 3A DRIVE CURRENT OF SENSOR PROBE 101

FIG. 3B DRIVE CURRENT OF SENSOR PROBE 102

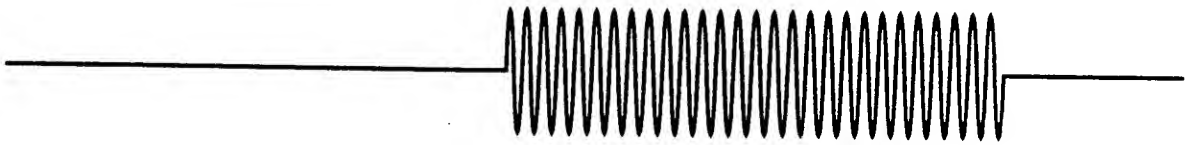


FIG. 3C DRIVE TIMING SIGNAL OF SENSOR 101

FIG. 3D DRIVE TIMING SIGNAL OF SENSOR 102

FIG. 3E MEASUREMENT TIMING SIGNAL OF SENSOR 101

FIG. 3F MEASUREMENT TIMING SIGNAL OF SENSOR 102

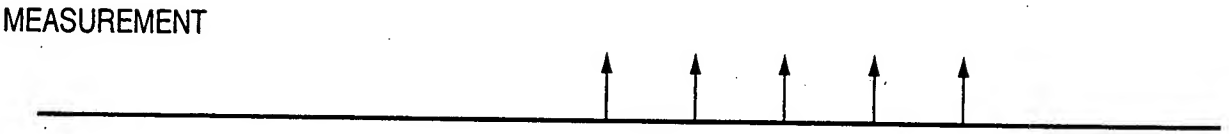


FIG. 4

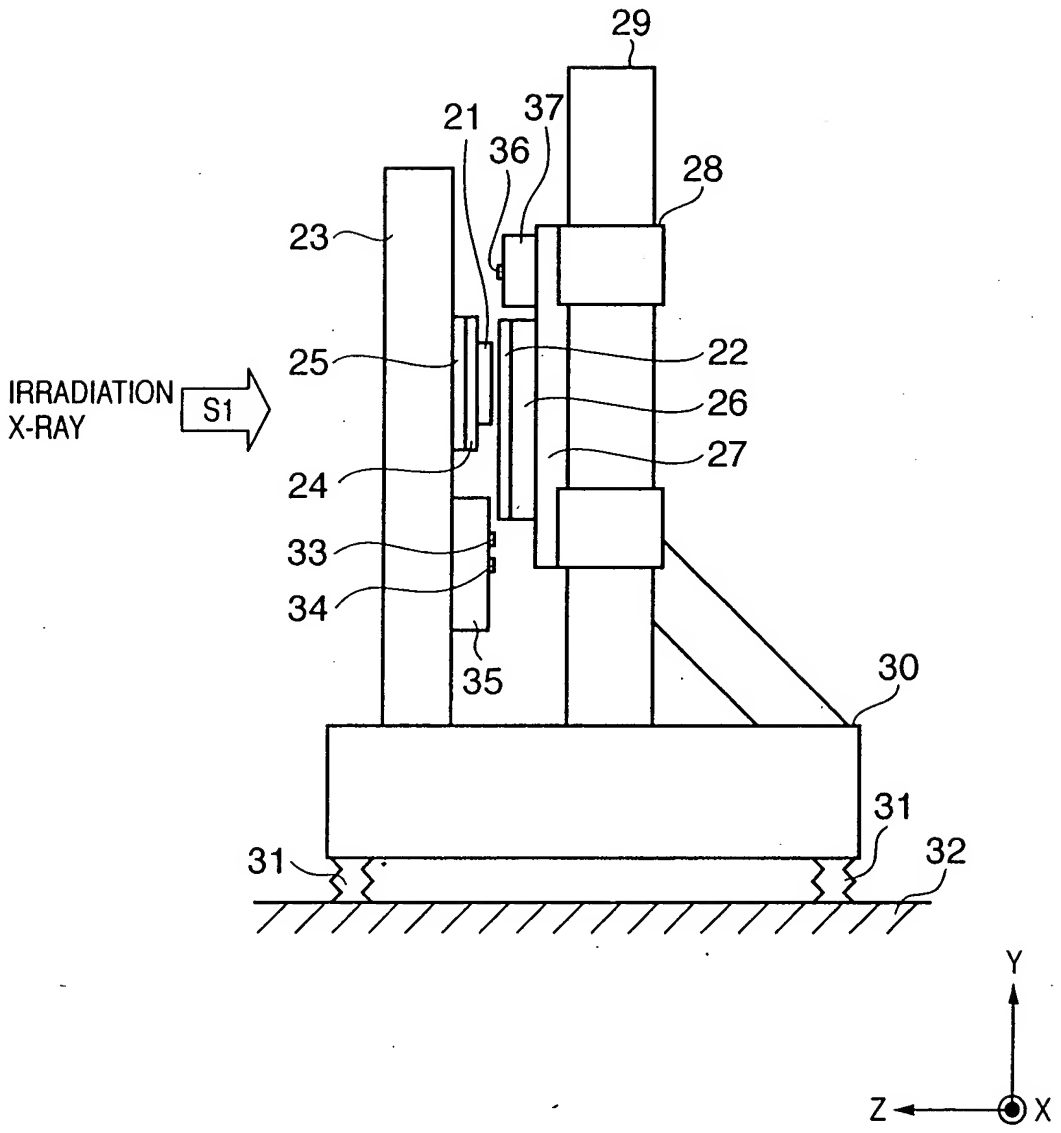

29
21
37
36
28
23
25
22
IRRADIATION
X-RAY
S1
26
27
24
33
34
35
30
31
31
32
Y
Z
X

FIG. 5

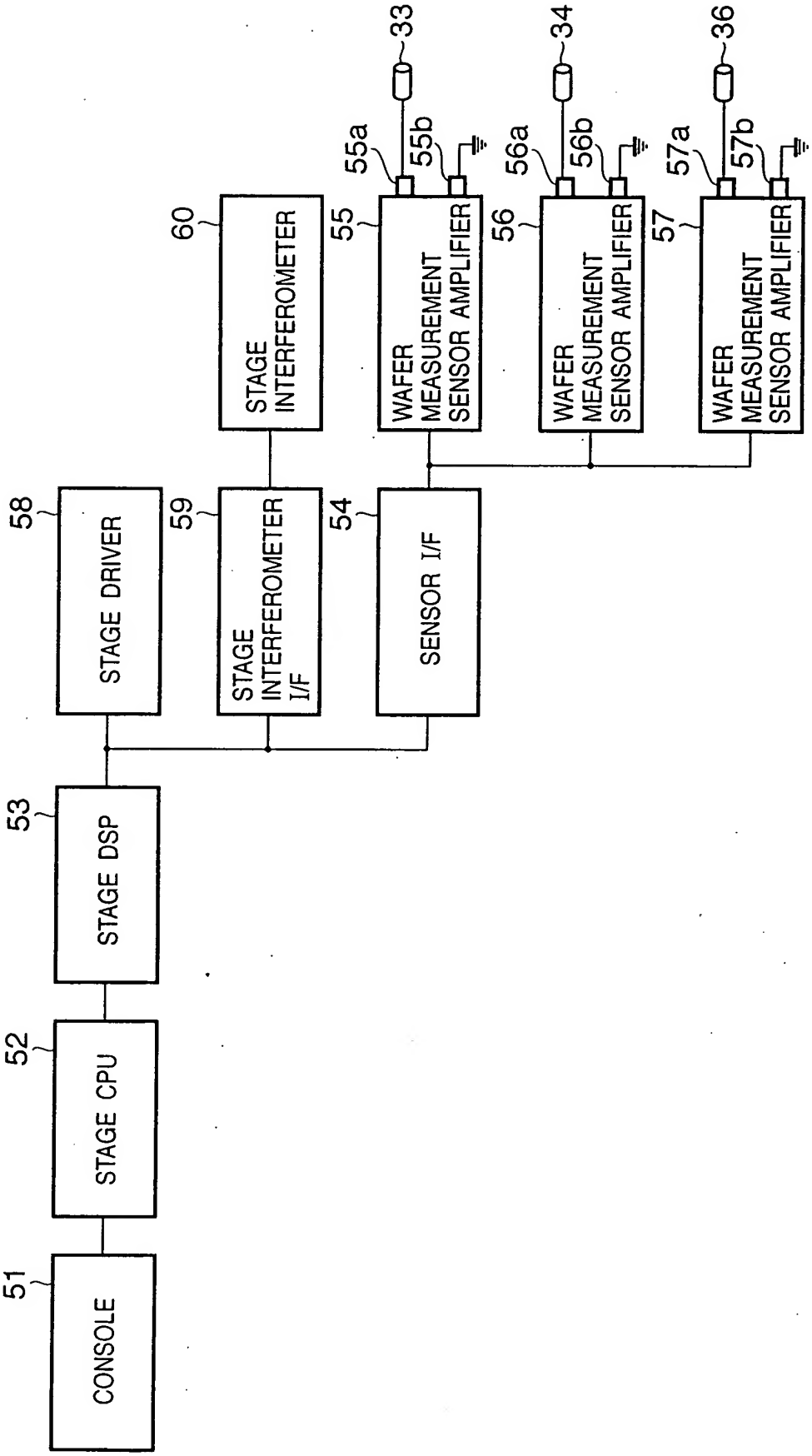

CONSOLE
51
STAGE CPU
52
STAGE DSP
53
STAGE DRIVER
58
STAGE INTERFEROMETER I/F
59
SENSOR I/F
54
STAGE INTERFEROMETER
60
WAFER MEASUREMENT SENSOR AMPLIFIER
55
WAFER MEASUREMENT SENSOR AMPLIFIER
56
WAFER MEASUREMENT SENSOR AMPLIFIER
57
55a
55b
56a
56b
57a
57b
33
34
36

FIG. 6

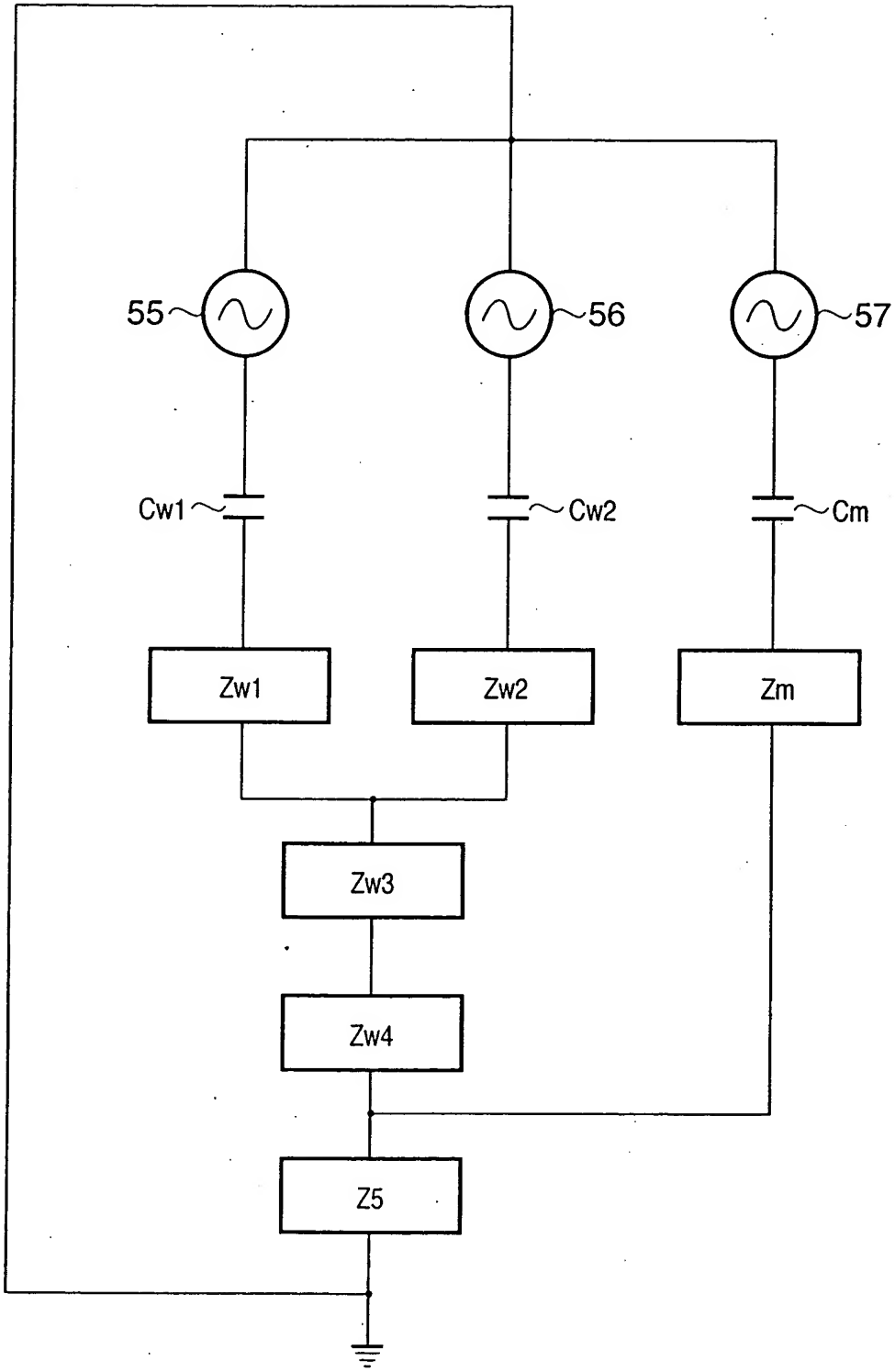


FIG. 7A

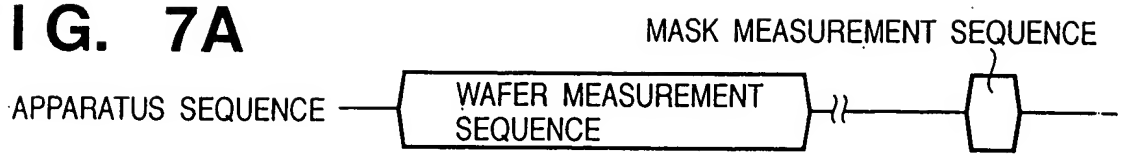


FIG. 7B

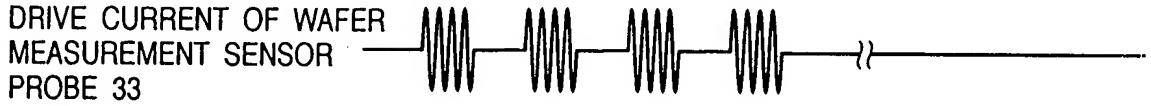


FIG. 7C

FIG. 7D

FIG. 7E

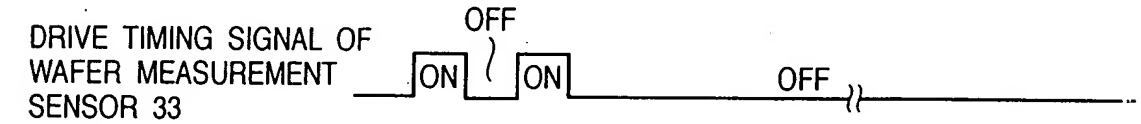


FIG. 7F

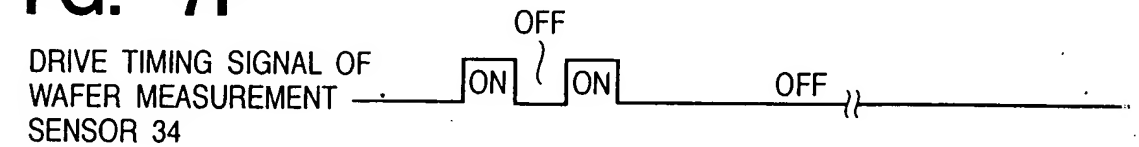


FIG. 7G

FIG. 7H

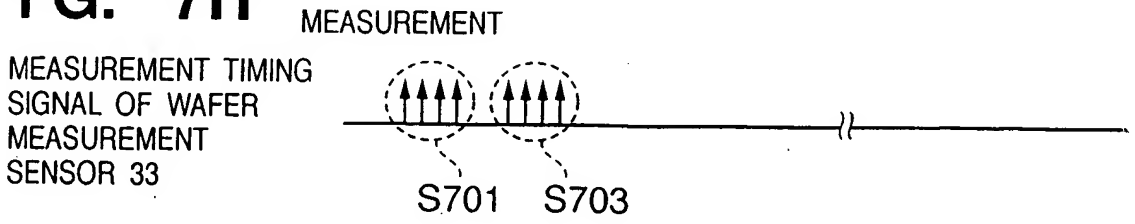


FIG. 8A

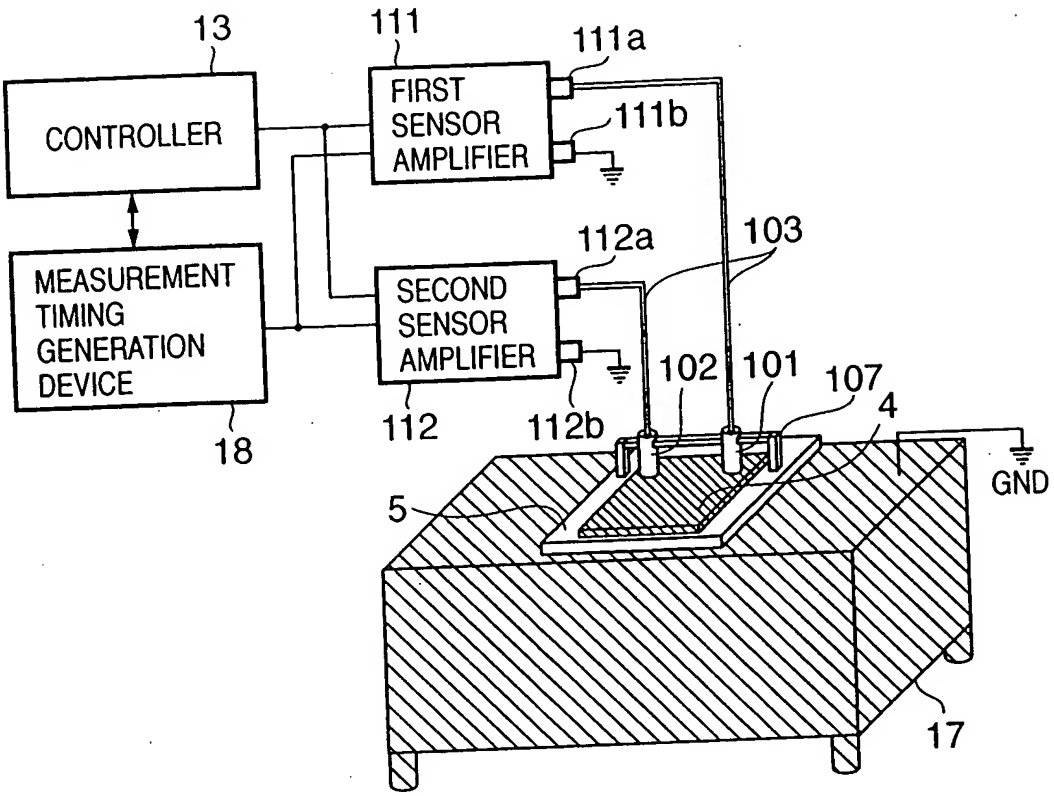
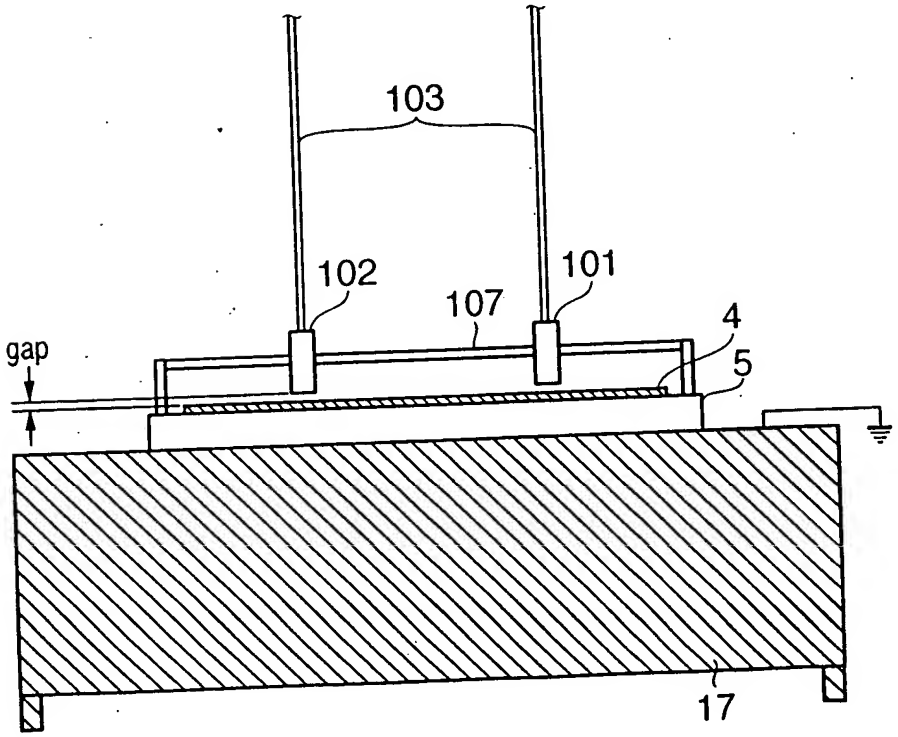


FIG. 8B



BEST AVAILABLE COPY

FIG. 9

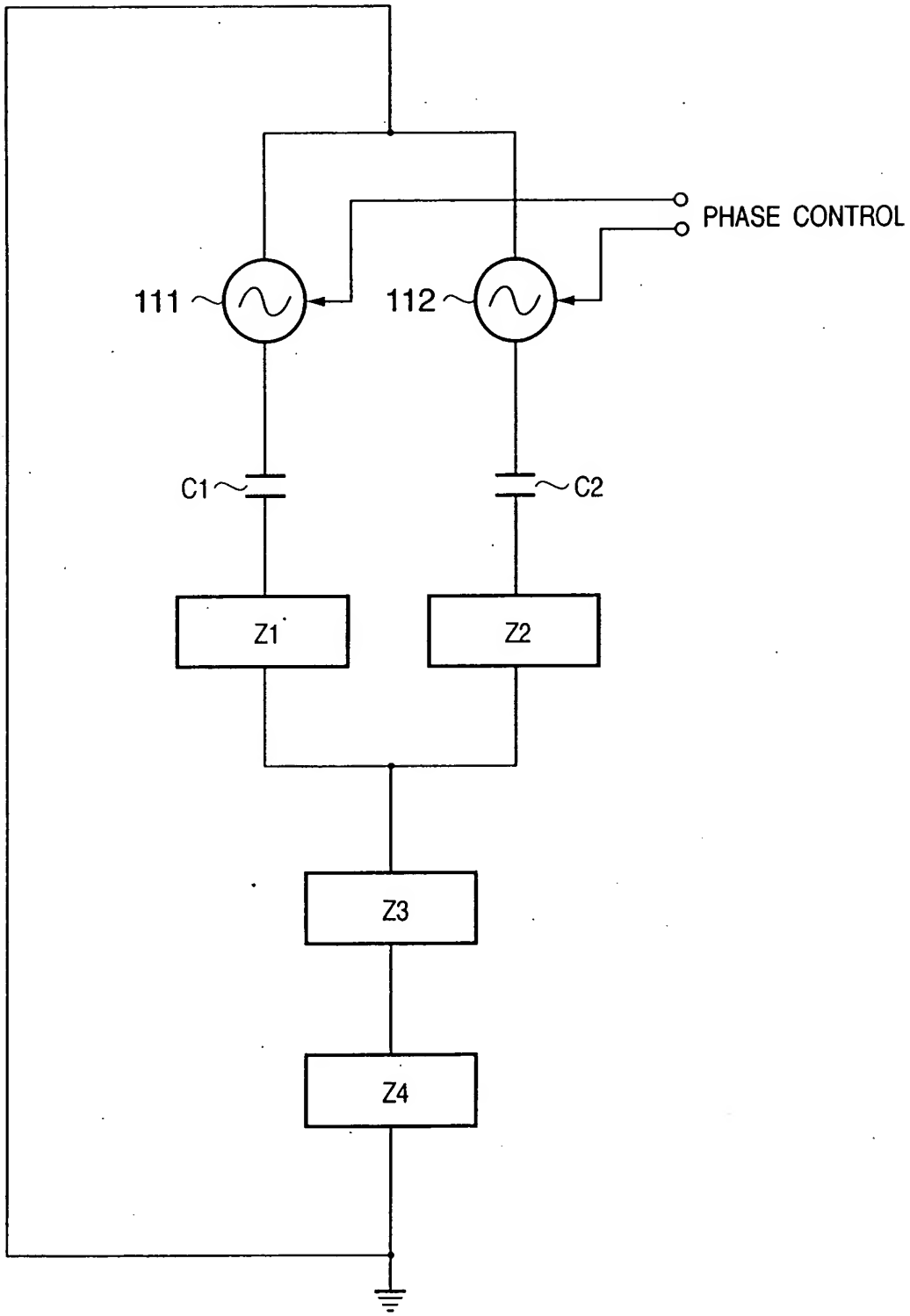


FIG. 10A DRIVE CURRENT OF FIRST SENSOR PROBE

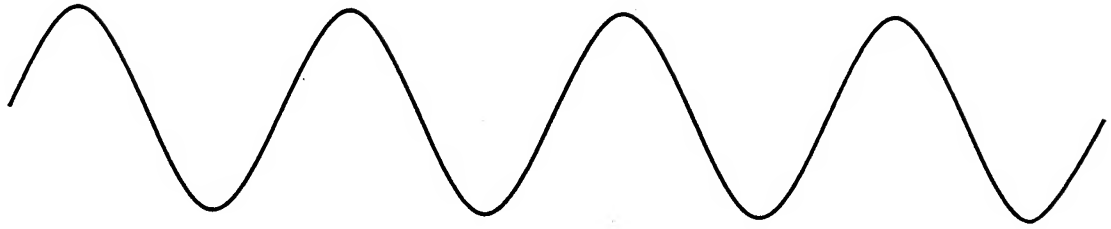


FIG. 10B DRIVE CURRENT OF SECOND SENSOR PROBE

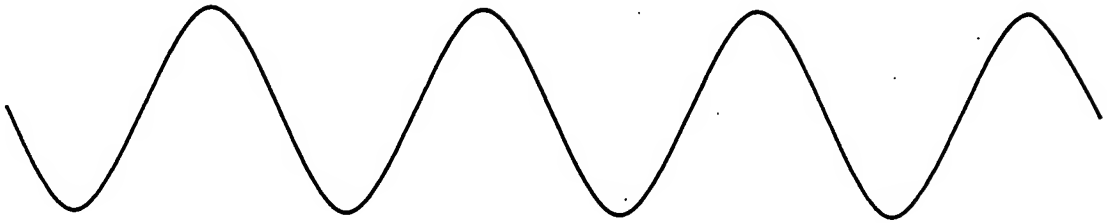
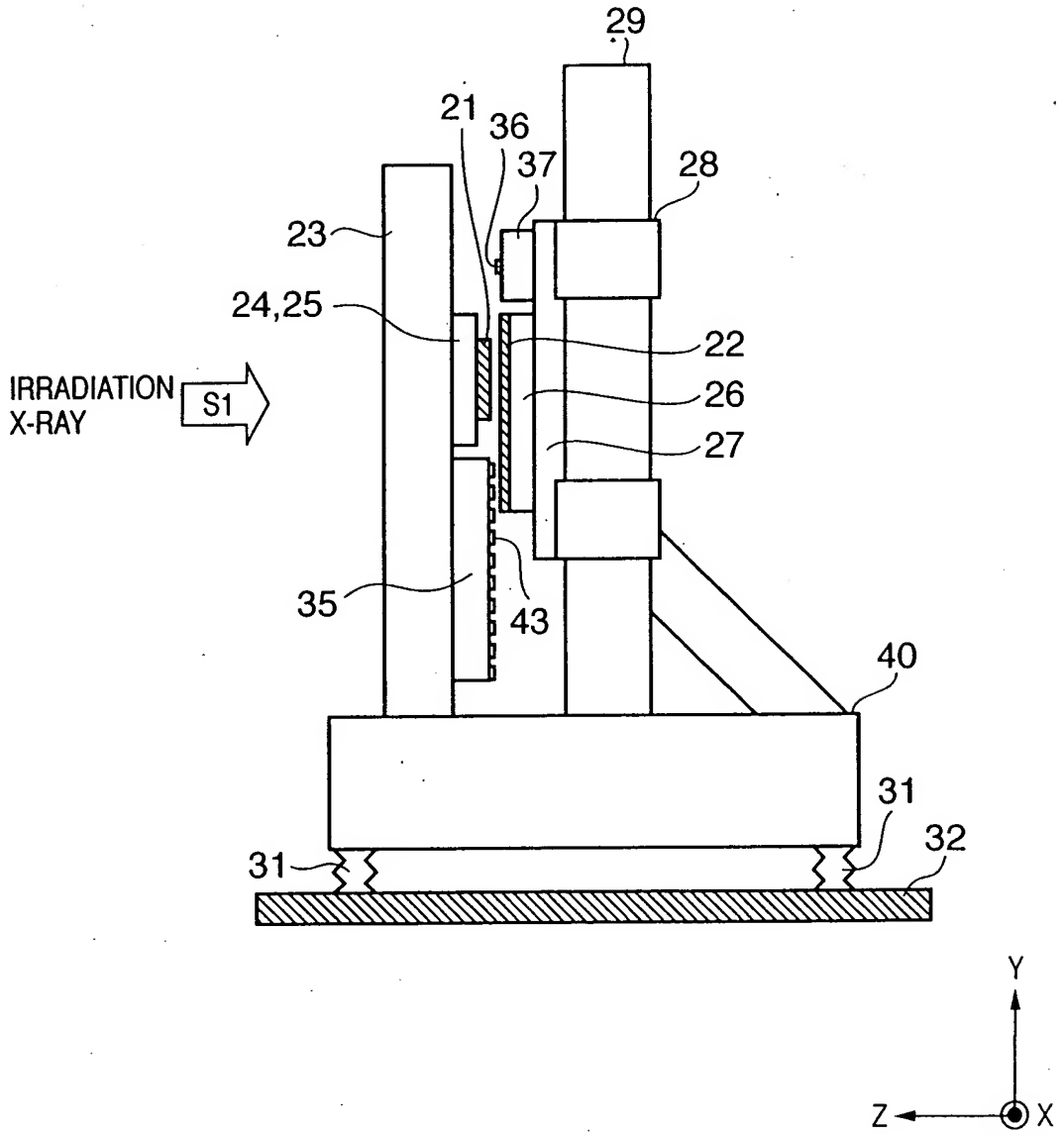


FIG. 10C GROUND CURRENT

FIG. 10D MEASUREMENT VALUE OF FIRST SENSOR

FIG. 10E MEASUREMENT VALUE OF SECOND SENSOR

FIG. 11


29
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27
IRRADIATION
X-RAY
S1
35
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40
31
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Y
Z
X

FIG. 12

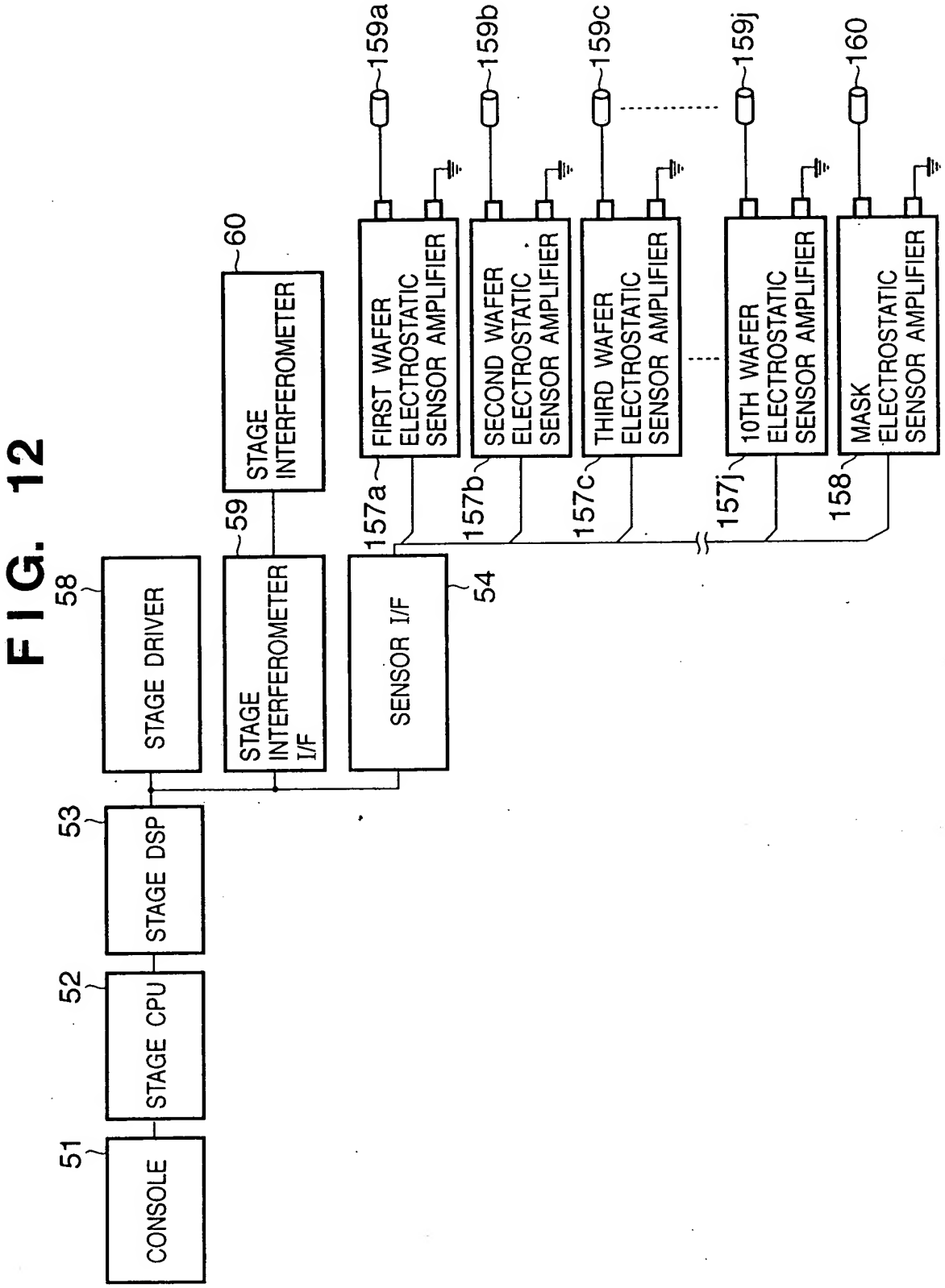
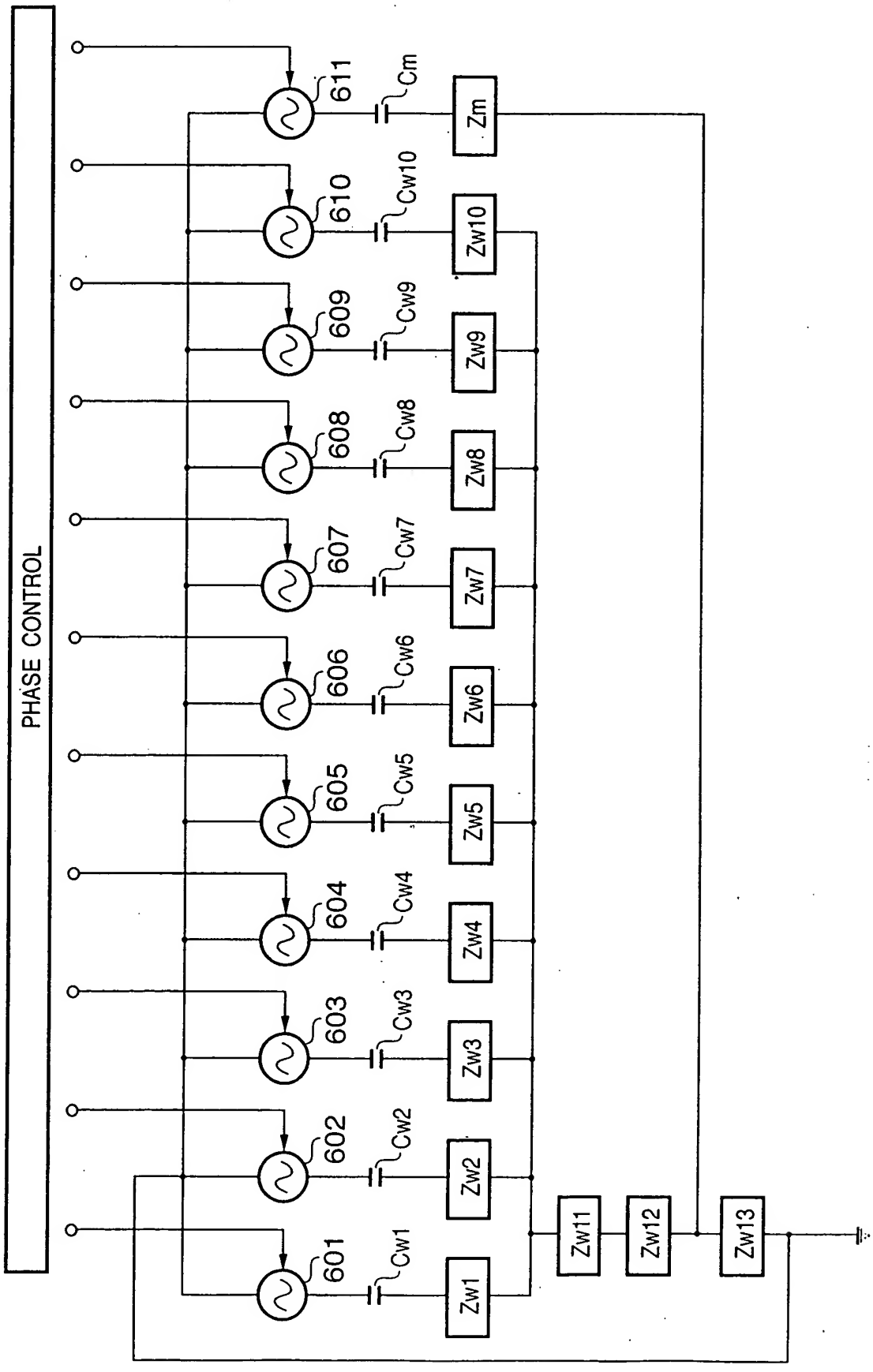

CONSOLE
51
STAGE CPU
52
STAGE DSP
53
STAGE DRIVER
58
STAGE INTERFEROMETER I/F
59
STAGE INTERFEROMETER
60
SENSOR I/F
54
FIRST WAFER ELECTROSTATIC SENSOR AMPLIFIER
SECOND WAFER ELECTROSTATIC SENSOR AMPLIFIER
THIRD WAFER ELECTROSTATIC SENSOR AMPLIFIER
10TH WAFER ELECTROSTATIC SENSOR AMPLIFIER
MASK ELECTROSTATIC SENSOR AMPLIFIER
157a
157b
157c
157j
158
159a
159b
159c
159j
160

FIG. 13


PHASE CONTROL
601
602
603
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611
Cw1
Cw2
Cw3
Cw4
Cw5
Cw6
Cw7
Cw8
Cw9
Cw10
Cm
Zw1
Zw2
Zw3
Zw4
Zw5
Zw6
Zw7
Zw8
Zw9
Zw10
Zm
Zw11
Zw12
Zw13

FIG. 14A

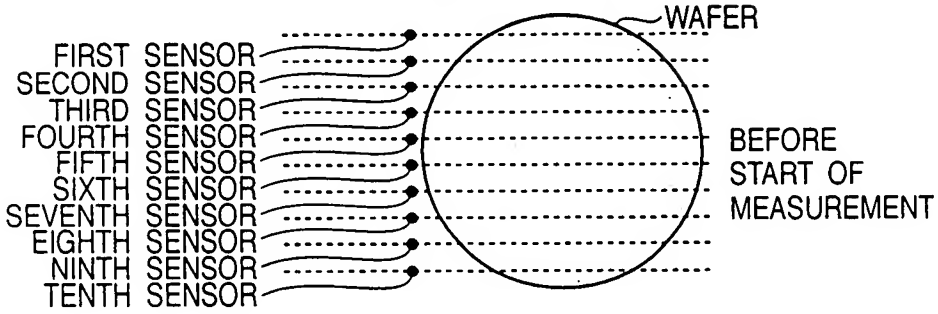


FIG. 14B

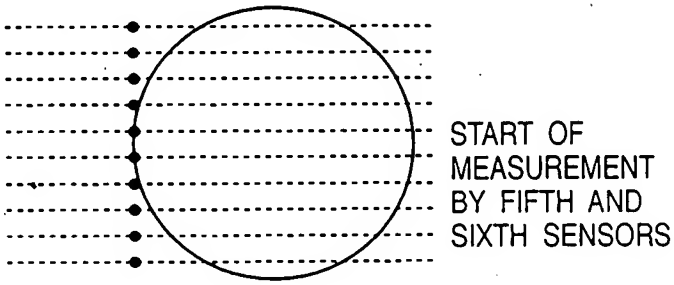
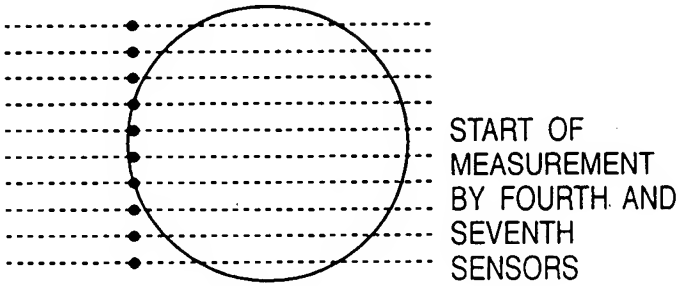


FIG. 14C



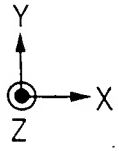


FIG. 14D

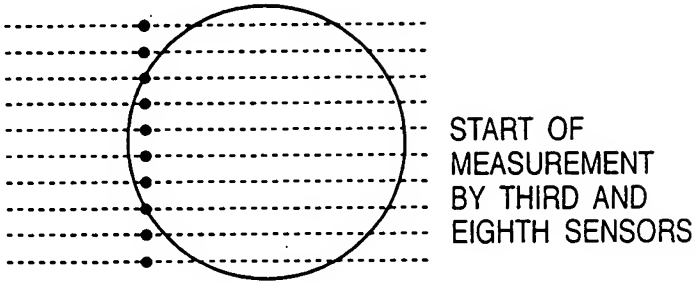


FIG. 14E

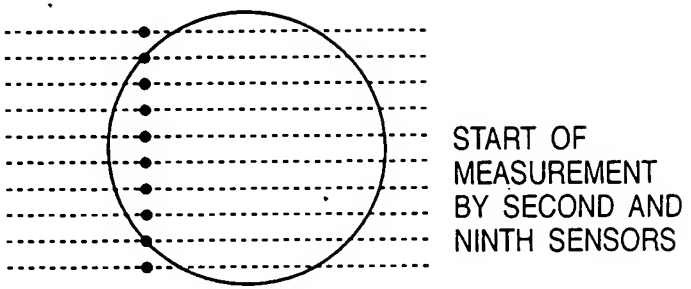
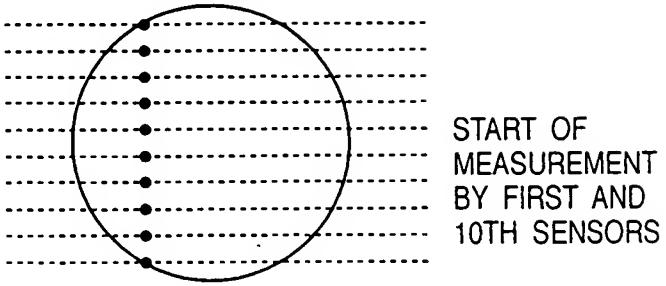


FIG. 14F



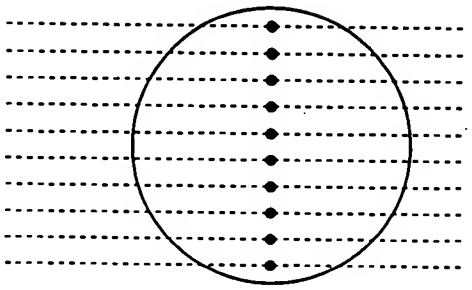


FIG. 15A

MEASUREMENT OF WAFER CENTER

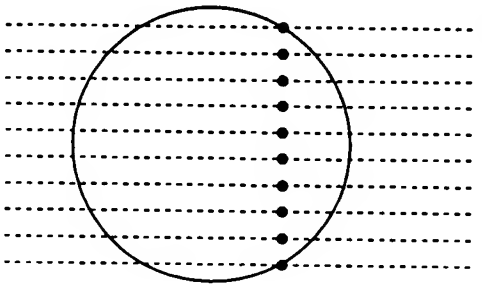


FIG. 15B

END OF MEASUREMENT BY FIRST AND 10TH SENSORS

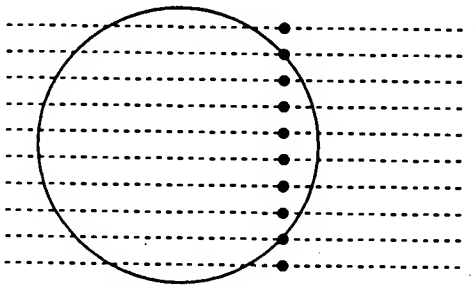
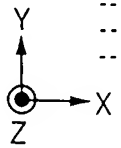


FIG. 15C

END OF MEASUREMENT BY SECOND AND NINTH SENSORS



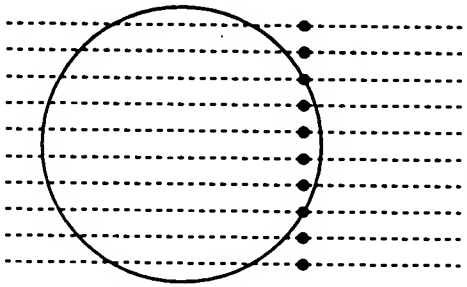


FIG. 15D

END OF MEASUREMENT BY THIRD AND EIGHTH SENSORS

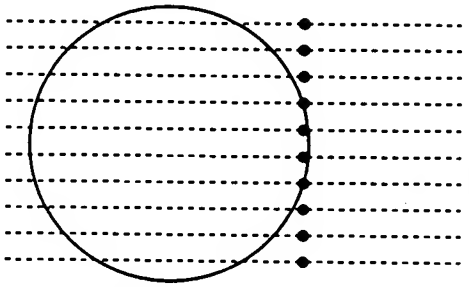


FIG. 15E

END OF MEASUREMENT BY FOURTH AND SEVENTH SENSORS

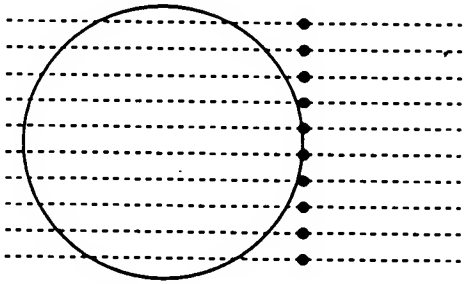


FIG. 15F

END OF MEASUREMENT BY FIFTH AND SIXTH SENSORS

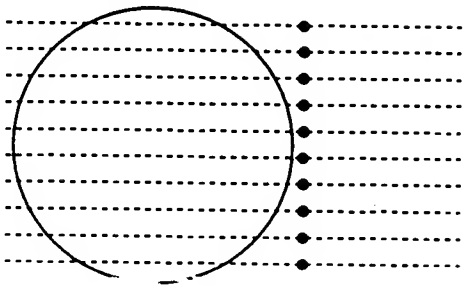


FIG. 15G

AFTER END OF SENSOR MEASUREMENT

FIG. 16A DRIVE CURRENT OF FIRST SENSOR PROBE

FIG. 16B DRIVE CURRENT OF SECOND SENSOR PROBE

FIG. 16C DRIVE CURRENT OF THIRD SENSOR PROBE

FIG. 16D DRIVE CURRENT OF FOURTH SENSOR PROBE

FIG. 16E DRIVE CURRENT OF FIFTH SENSOR PROBE

FIG. 16F DRIVE CURRENT OF SIXTH SENSOR PROBE

FIG. 16G DRIVE CURRENT OF SEVENTH SENSOR PROBE

FIG. 16H DRIVE CURRENT OF EIGHTH SENSOR PROBE

FIG. 16I DRIVE CURRENT OF NINTH SENSOR PROBE

FIG. 16J DRIVE CURRENT OF 10TH SENSOR PROBE

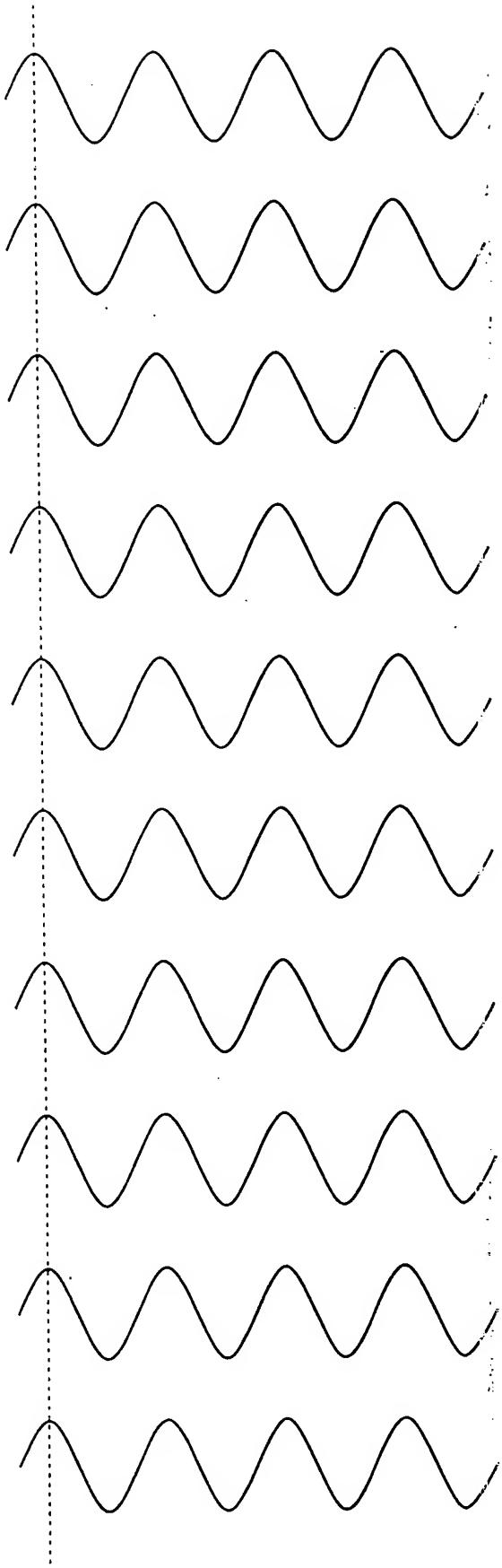


FIG. 17A

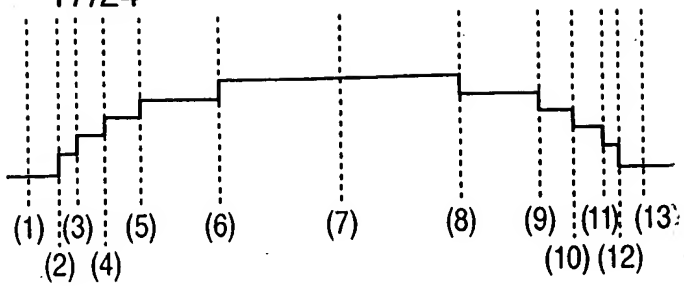


FIG. 17B

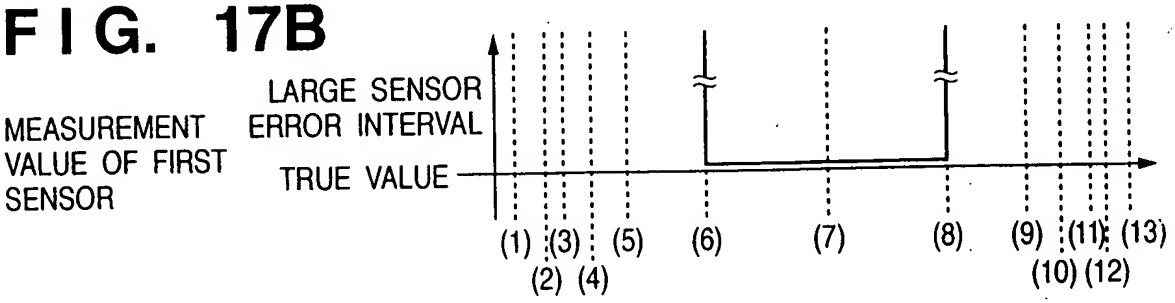


FIG. 17C

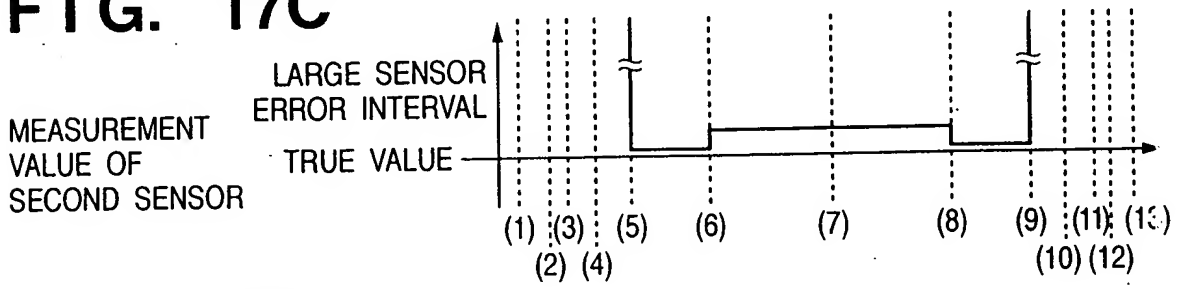


FIG. 17D

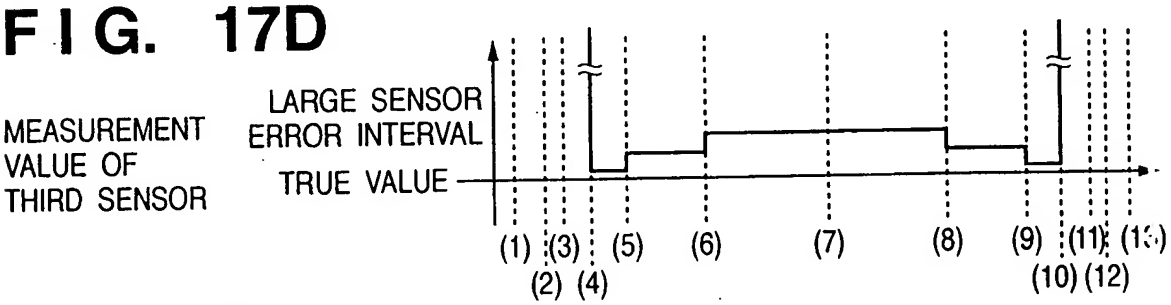


FIG. 17E

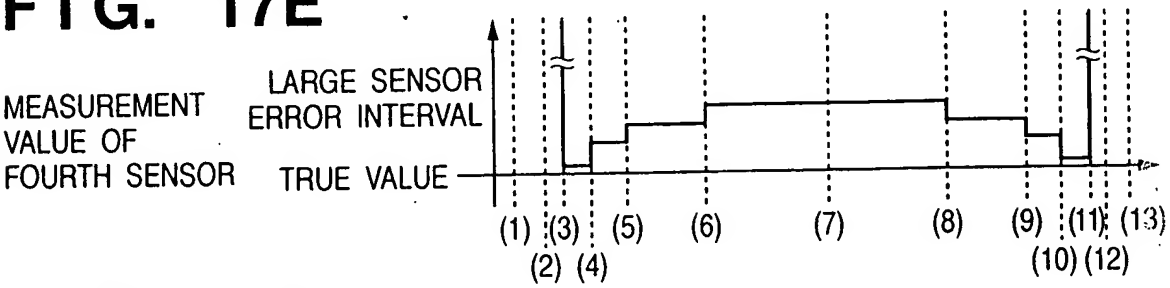


FIG. 17F

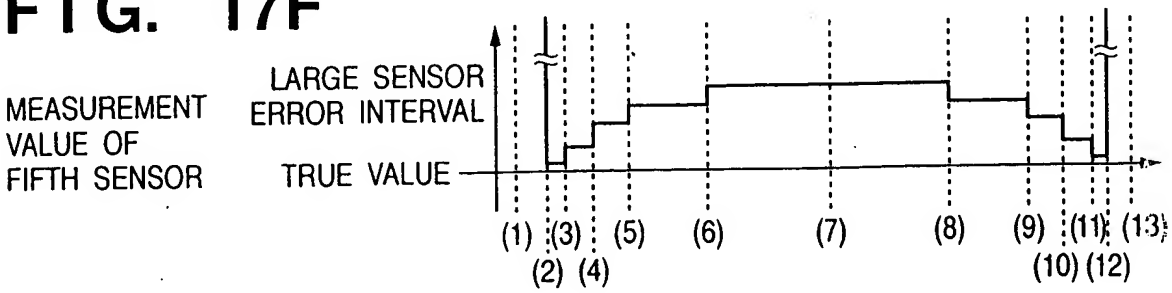


FIG. 18A

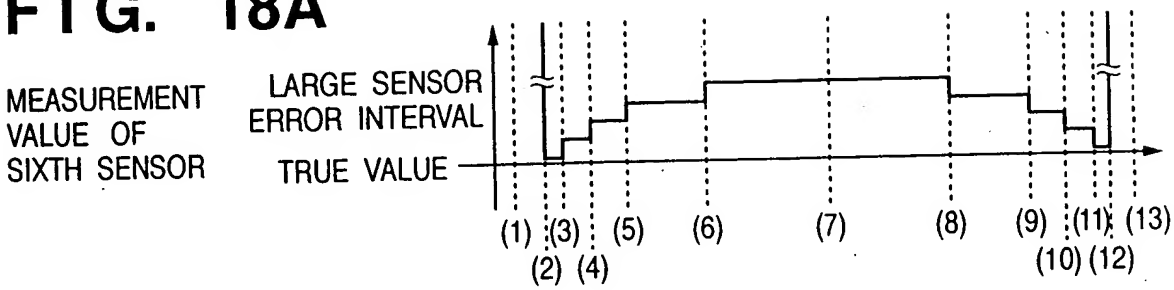


FIG. 18B

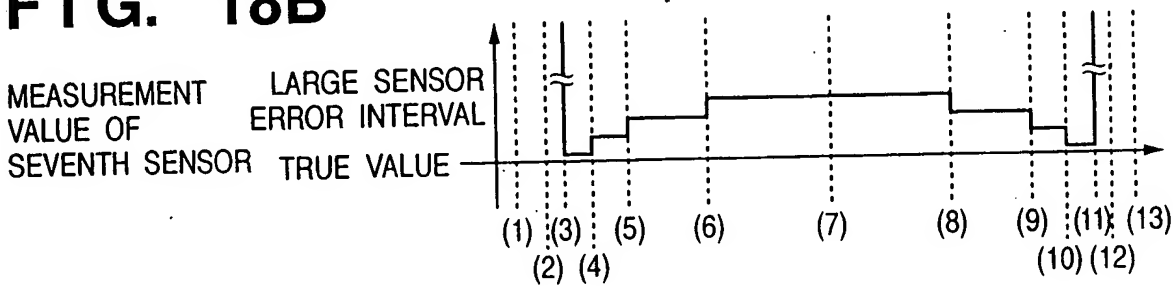


FIG. 18C

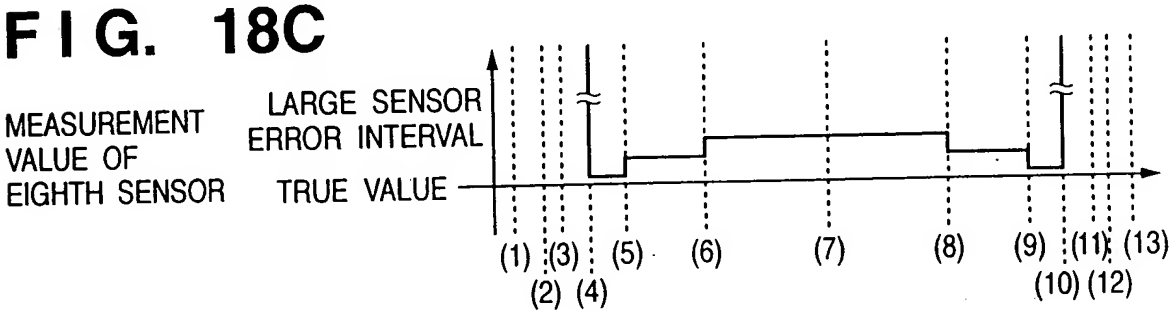


FIG. 18D

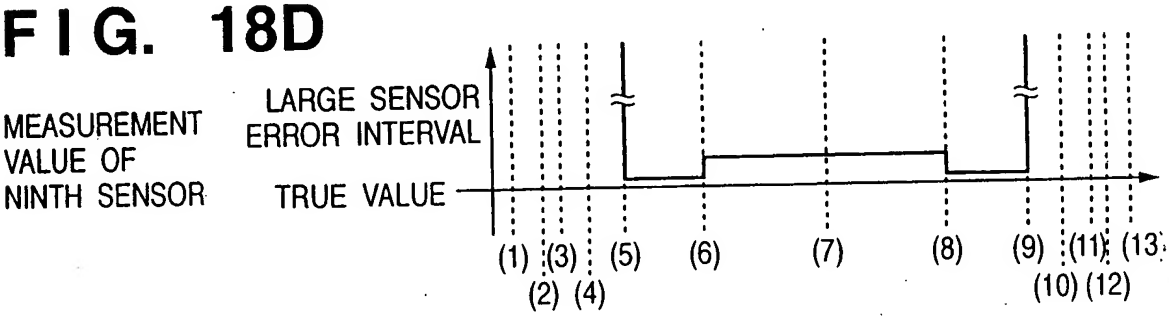


FIG. 18E

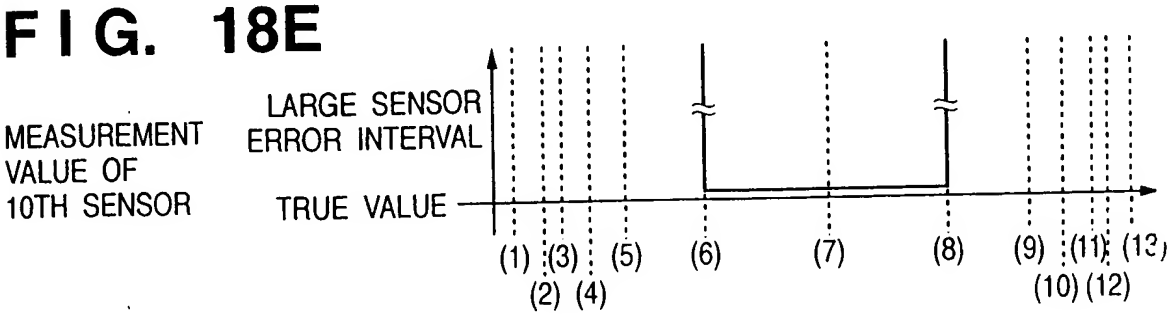


FIG. 19A DRIVE CURRENT OF FIRST SENSOR PROBE

FIG. 19B DRIVE CURRENT OF SECOND SENSOR PROBE

FIG. 19C DRIVE CURRENT OF THIRD SENSOR PROBE

FIG. 19D DRIVE CURRENT OF FOURTH SENSOR PROBE

FIG. 19E DRIVE CURRENT OF FIFTH SENSOR PROBE

FIG. 19F DRIVE CURRENT OF SIXTH SENSOR PROBE

FIG. 19G DRIVE CURRENT OF SEVENTH SENSOR PROBE

FIG. 19H DRIVE CURRENT OF EIGHTH SENSOR PROBE

FIG. 19I DRIVE CURRENT OF NINTH SENSOR PROBE

FIG. 19J DRIVE CURRENT OF 10TH SENSOR PROBE

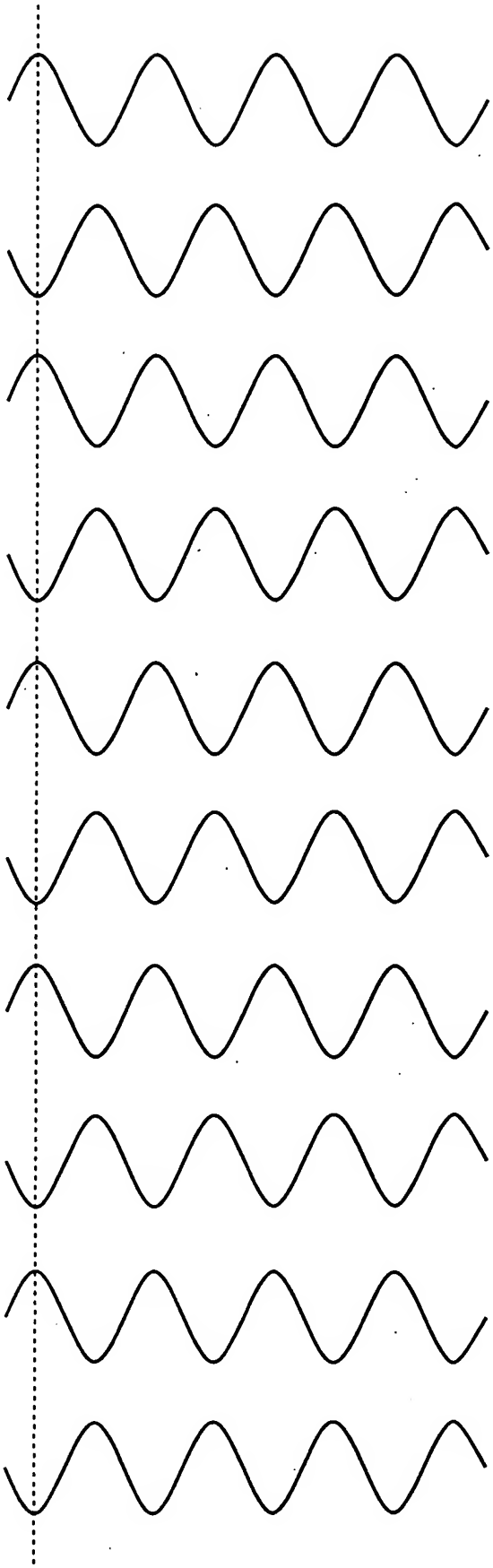


FIG. 20A

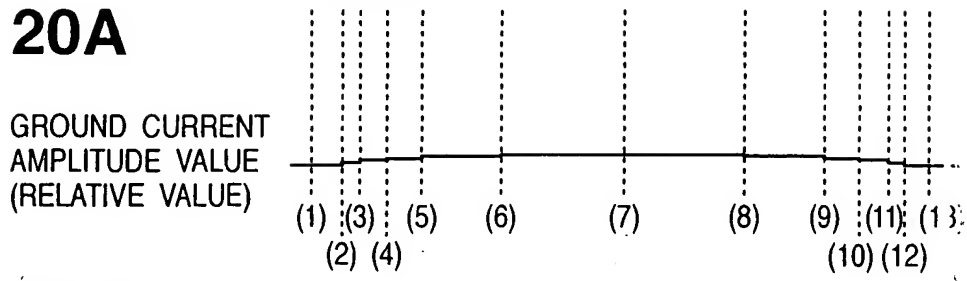


FIG. 20B

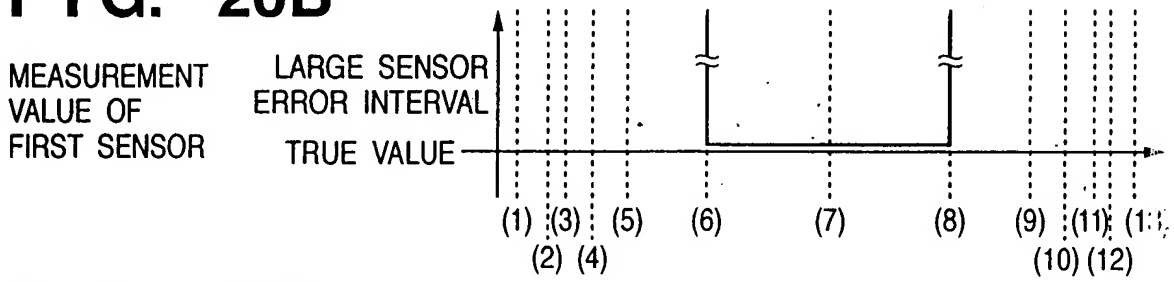


FIG. 20C

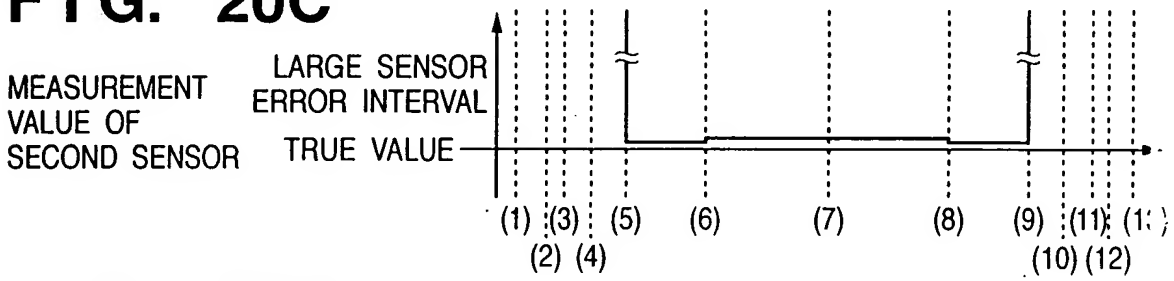


FIG. 20D

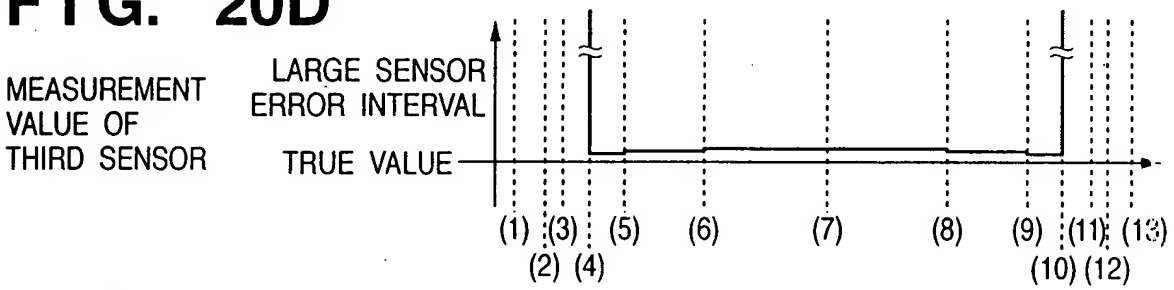


FIG. 20E

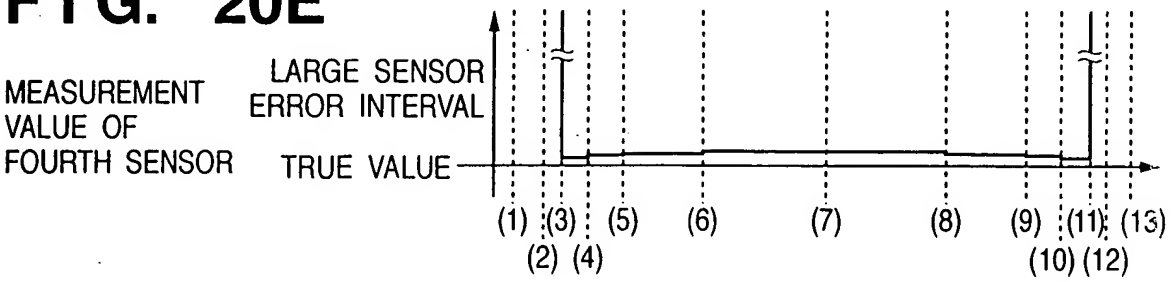


FIG. 20F

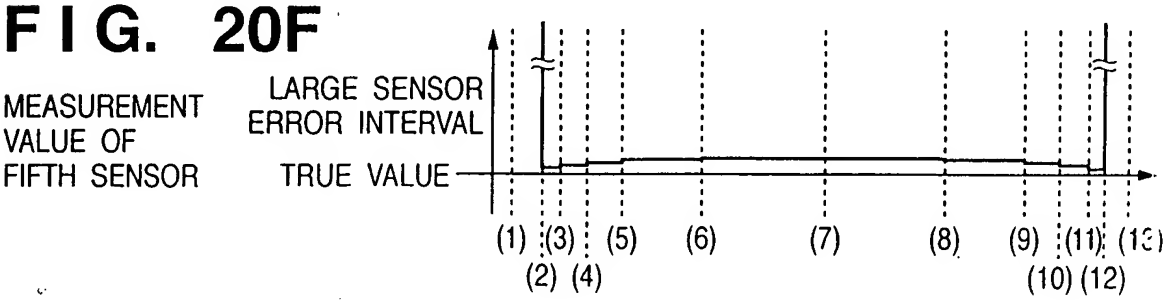


FIG. 21A

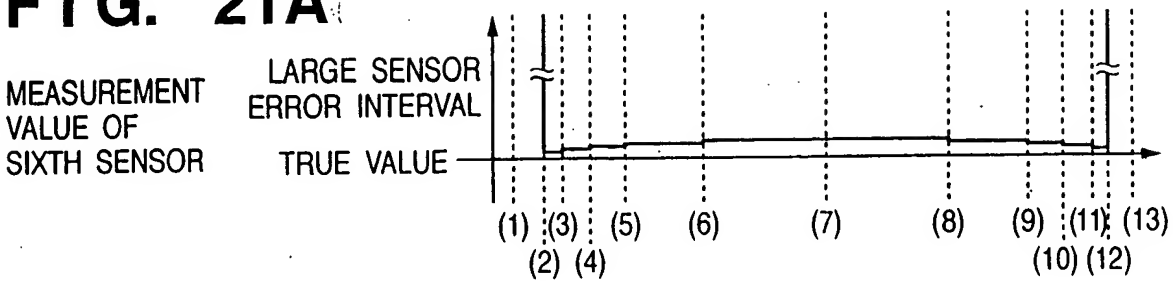


FIG. 21B

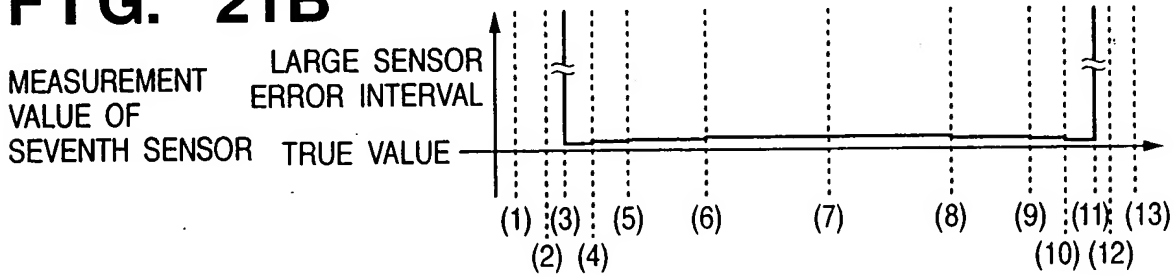


FIG. 21C

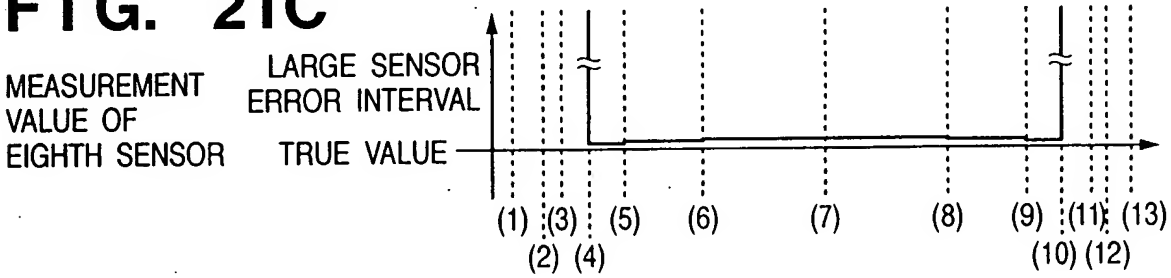


FIG. 21D

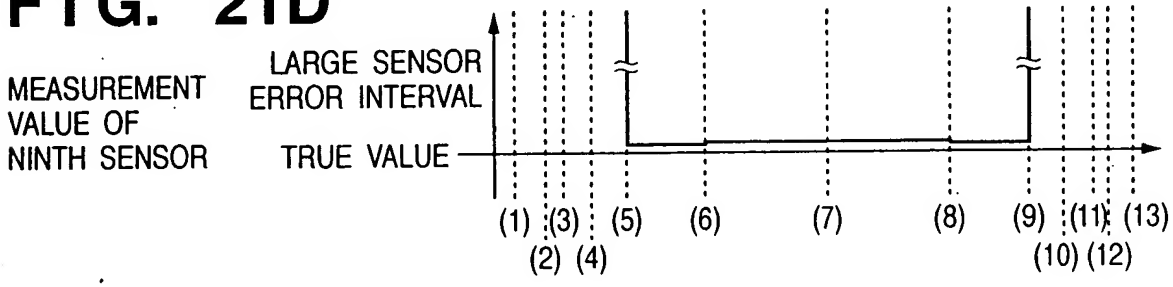


FIG. 21E

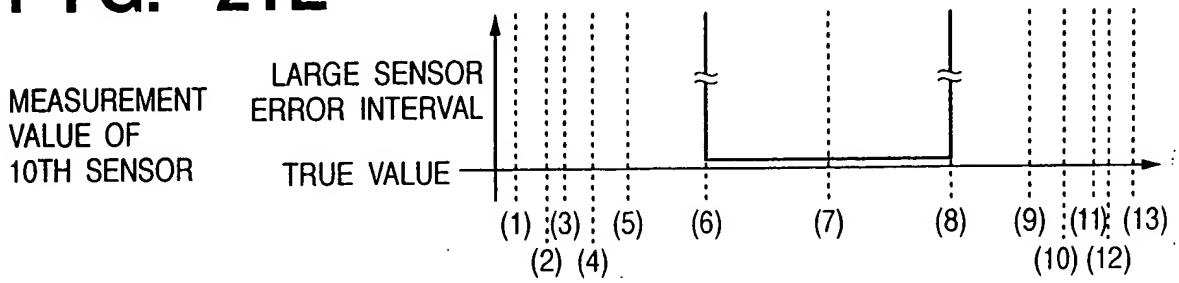


FIG. 22A

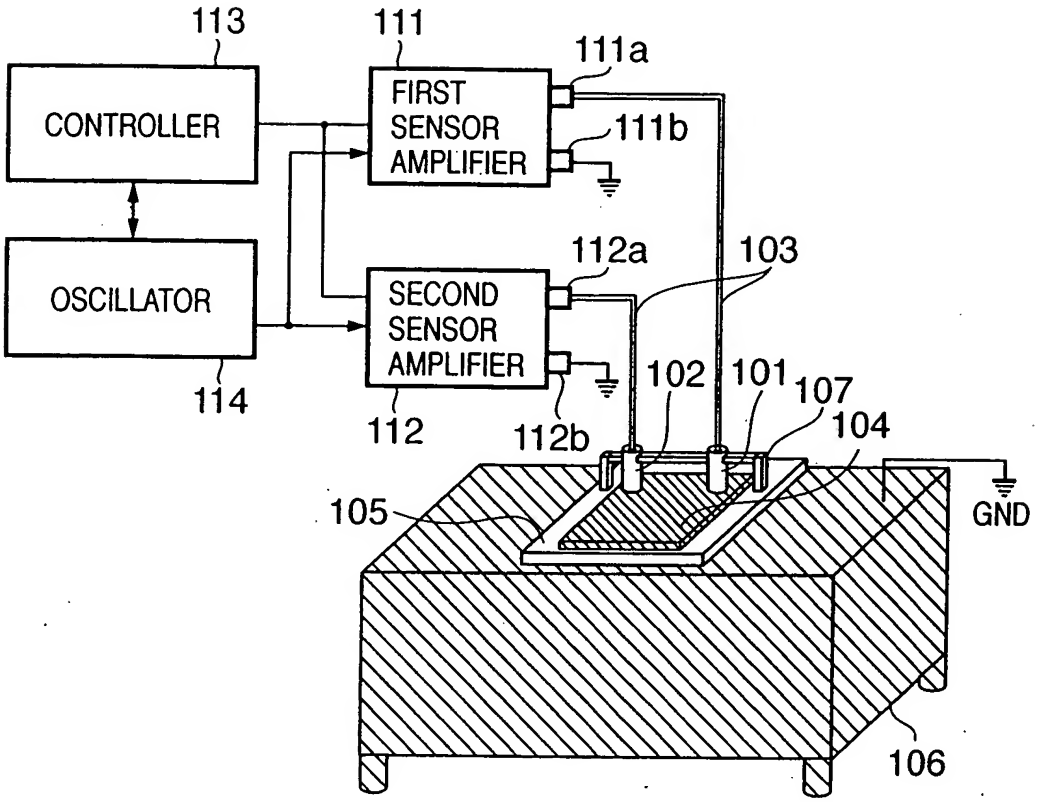


FIG. 22B

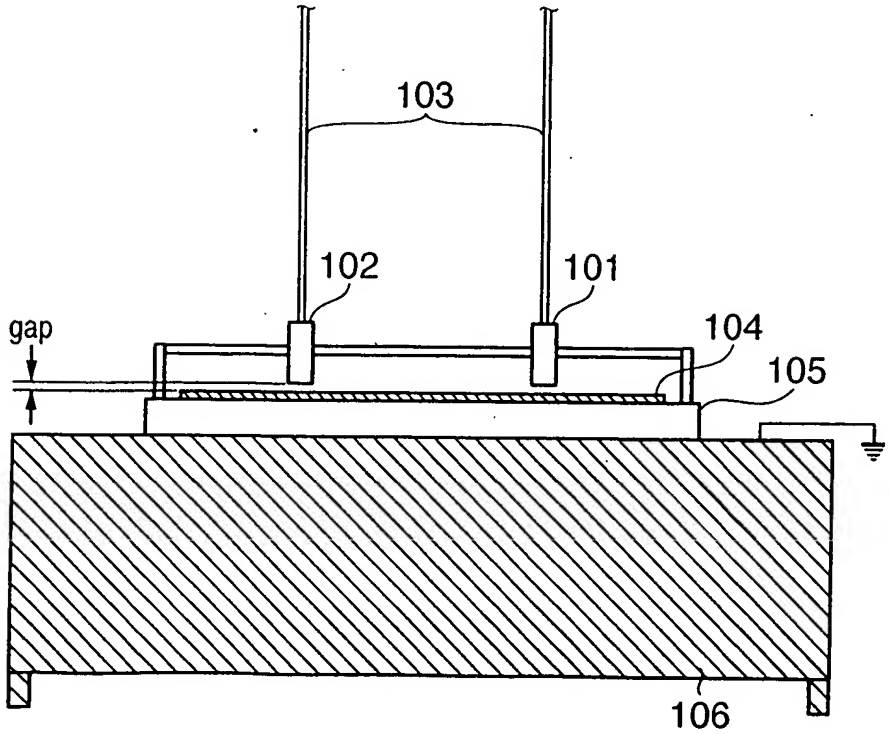


FIG. 23

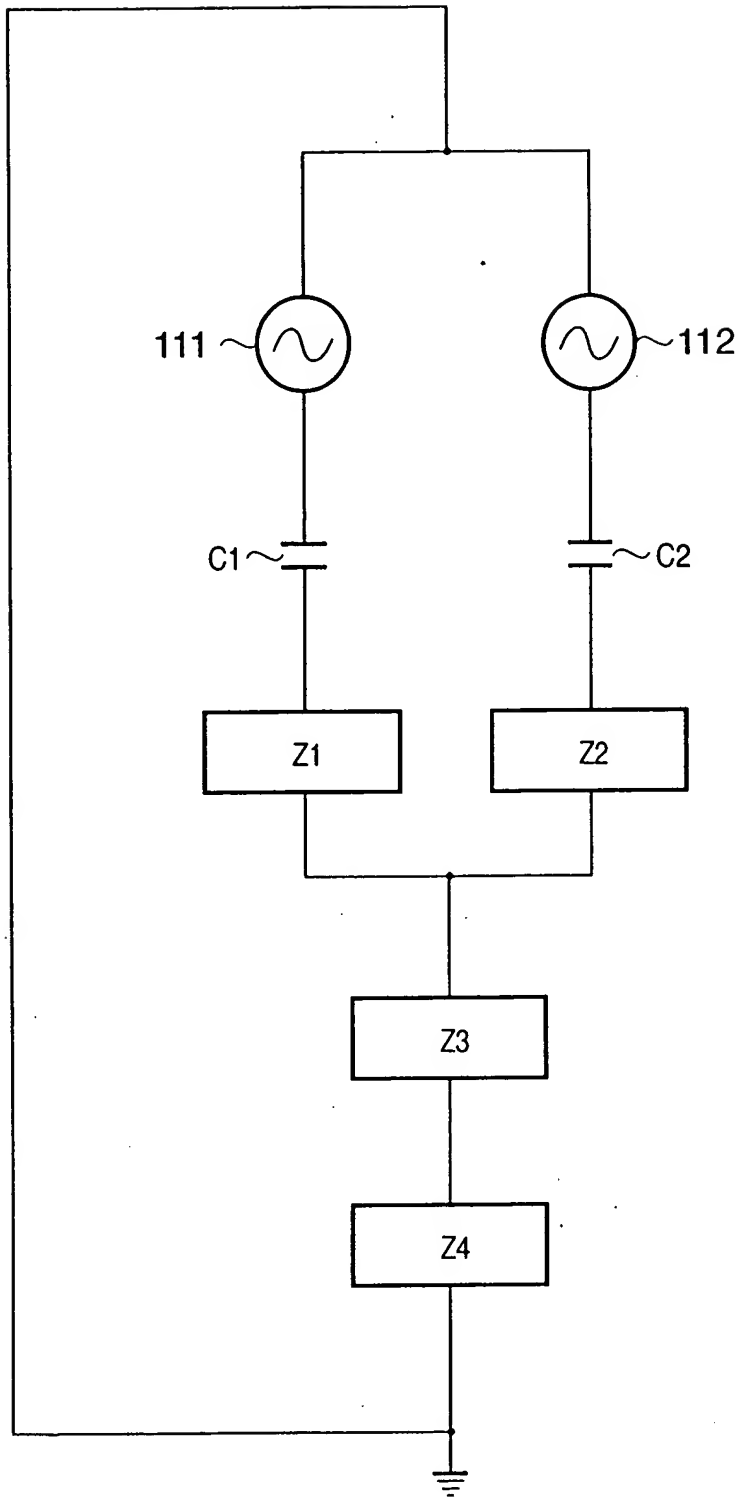


FIG. 24A

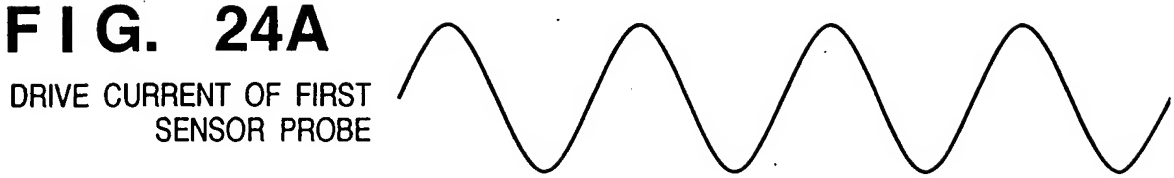


FIG. 24B

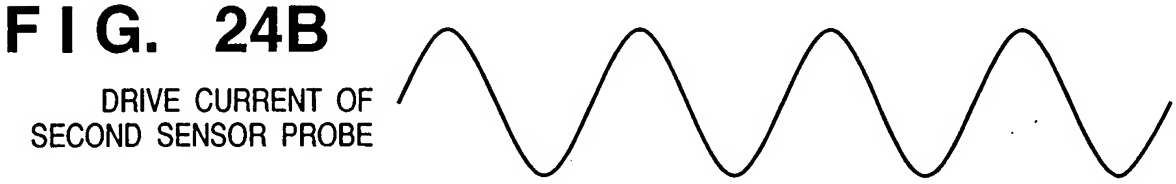


FIG. 24C

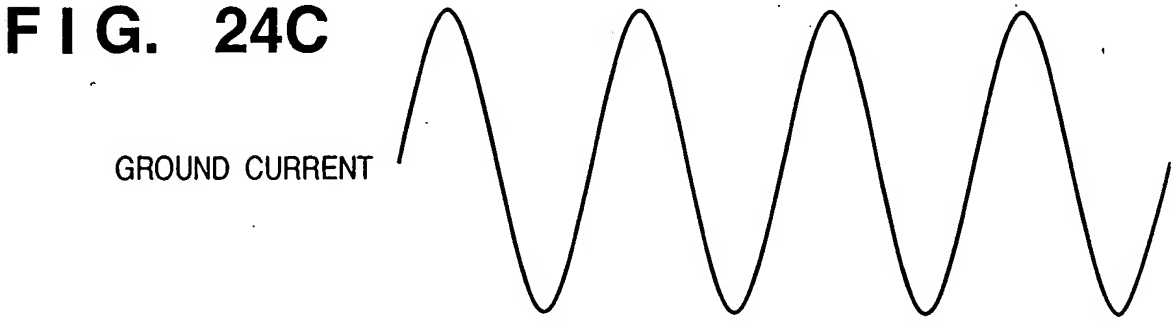


FIG. 24D

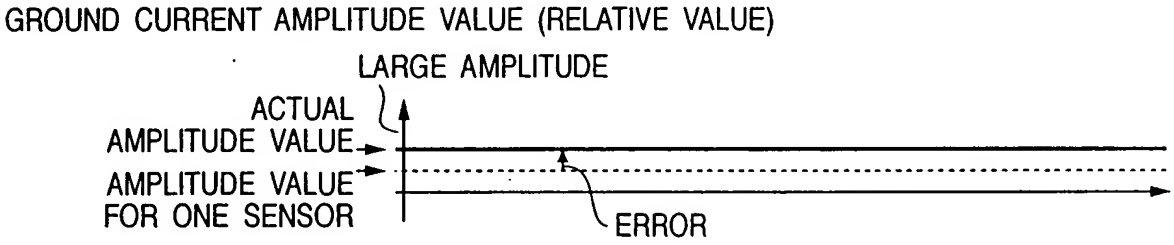


FIG. 24E

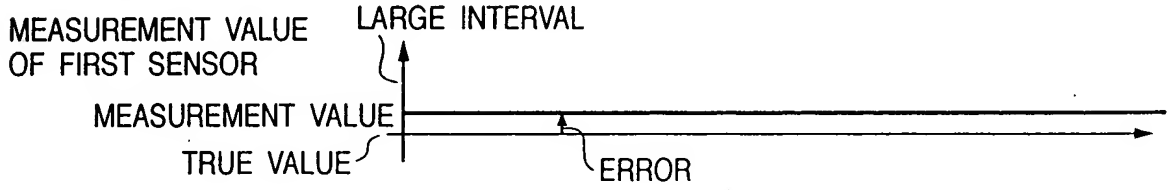
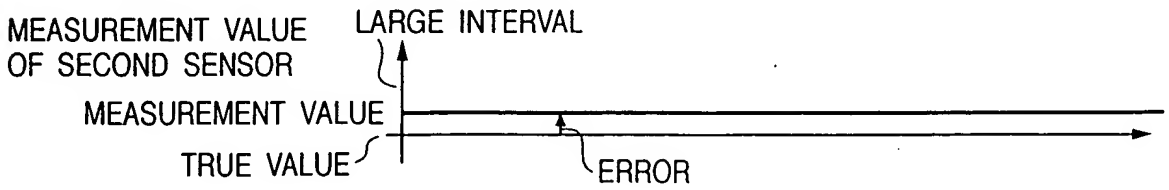



FIG. 24F